APPENDIX A--Letters of Agreement

460-A6m7-0007

MAR 13 2001

STA-I/KB/DB/4364

Paris, 7 February 2001

Ms P. Diane Rausch
Director
Space Science & Aeronautics
Division
Office of External Relations
NASA HQ
Washington, D.C. 20546-0001
U.S.A.

Dear Ms Rausch,

I refer to your letter of 1 February 2001 proposing an Agreement between NASA and ESA to address the initial phase of cooperation on the STEREO mission.

It gives me pleasure to inform you that the terms and conditions as outlined in your above referenced letter are acceptable to ESA.

I therefore consider that your letter of 1 February 2001 together with this affirmative reply document our joint understanding as to the implementation of this cooperative effort.

Yours sincerely,

G. Giampalmo
Head of International Relations

European Space Agency
Agence spatiale européenne

Headquarters - Siège
8-10 rue Mario-Nikis - F-75738 Paris
Tel. +33 (0) 1 53 69 76 54 Fax +33 (0) 1 53 69 75 60 Telex ESA 202 746 F

KB/Chron

National Aeronautics and
Space Administration
Office of the Administrator
Washington, DC 20546-0001

IS

FEB - 1 2001

Mr. Giuseppe Giampalmo
Head, International Relations Office
European Space Agency
8-10 rue Mario-Nikis
75738 Paris Cedex 15
France

Dear Mr. Giampalmo:

The National Aeronautics and Space Administration (NASA) and the European Space Agency (ESA) have a mutual interest in pursuing cooperation on the Solar Terrestrial Relations Observatory (STEREO) mission. The purpose of this letter is to establish an Agreement between NASA and ESA (hereinafter, "the Parties") to address the initial phase of our cooperation on the STEREO mission. The Parties intend to formalize subsequent phases of cooperation in a Memorandum of Understanding (MOU) incorporating the same terms and conditions as this Agreement.

STEREO is a major mission in the NASA Solar Terrestrial Probes Program within the NASA Sun-Earth Connection theme in the Office of Space Science. STEREO will unveil the Sun in three dimensions for the first time. Its objective is to address the origin, evolution and interplanetary consequences of one of the most massive disturbances in our solar system called the coronal mass ejection (CME). This will be achieved by sending two identically instrumented spacecraft, both at 1 Astronomical Unit orbit around the Sun, but one flying well ahead of the Earth and one behind the Earth.

The instrument suite for STEREO will characterize the CME plasma all the way from the solar surface to the orbit of the Earth. These instruments will measure physical characteristics of CMEs with remote sensing and local sensing instruments, allowing scientists to determine solar origins of CMEs, their propagation into the interplanetary medium and ultimately their consequences on Earth's magnetic field. By viewing CMEs in three dimensions, STEREO will be able to pinpoint their speed and distance from Earth, and thus more accurately time the arrival of the plasma cloud at the Earth.

The NASA Headquarters Office of Space Science solicited proposals for science participation in the STEREO mission, including the opportunity for international collaboration, in April 1999 in Announcement of Opportunity (AO) 99-OSS-01, and

made selections in November 1999. A team led by Dr. Janet Luhmann from the University of California at Berkeley was selected to provide the In Situ Measurement of Particles and CME Transients (IMPACT) instrument suite as a part of the STEREO payload. Dr. Luhmann proposed to work with Dr. R. G. Marsden and Dr. Trevor Sanderson the European Space and Technology Center (ESTEC) as Co-Investigators to provide electronics for the Solar Electron Proton Telescope (SEPT) instrument, a subset of the Solar Energetic Particles (SEP) package in the IMPACT instrument suite. As Principal Investigator for the IMPACT instrument suite, Dr. Luhmann will participate in the development, launch, post-launch, and data analysis phases of the mission. She will be responsible for the successful conduct of IMPACT instrument suite including the delivery, testing, integration and post-launch operations.

Pursuant to this Letter of Agreement, ESA will use reasonable efforts to carry out the following responsibilities:

1. Provide the flight electronics for two SEPT instruments, part of the IMPACT instrument suite on each of two identically-instrumented spacecraft;
2. Provide the engineering models of the electronics for two SEPT instruments, part of the IMPACT instrument suite on each of two identically-instrumented spacecraft;
3. Provide the ground support equipment to support the electronics for the two SEPT instruments;
4. Provide appropriate spare parts, documentation, calibration, electrical harnesses, purge plumbing, and simulators as required for the electronics for two SEPT instruments;
5. Provide support for the ESTEC Co-Investigator;
6. Participate in the definition and development of performance requirements and interfaces;
7. Support participation in Science Working Group and STEREO spacecraft and instrument meetings; and,
8. Report on the schedule and performance of ESTEC deliverables to the respective STEREO instrument leads.

NASA will use reasonable efforts to:

1. Provide overall project management for the STEREO mission;
2. Design and build the STEREO spacecraft;
3. Provide functional requirements for the SEPT instruments to ESTEC;
4. Provide interface (electrical, mechanical, software) specifications for the SEPT instruments to ESTEC;
5. Provide performance assurance requirements to ESTEC;
6. Manage the ESTEC-provided SEPT hardware contributions once delivered to the NASA Goddard Space Flight Center;
7. Provide the IMPACT Data Processing Unit-to-spacecraft interface information for the IMPACT SEPT instrument;
8. Provide final integration and testing of the SEPT in the SEP package;

9. Assure that the ESTEC Co-Investigator will have full rights to the STEREO data in accordance with the NASA Science Management Plan for STEREO;
10. Release science data in a manner consistent with NASA STEREO science data policy;
11. Launch the STEREO spacecraft; and,
12. Manage flight operations and testing and post-launch data analysis.

NASA and ESA (the Parties) will provide, on occasion, as mutually agreed, for personnel to visit one another's facilities to participate in integration and testing, and to observe, confer and advise the other Party in regard to aspects of design and development of compatible instrument interfaces integration and testing.

POINTS OF CONTACT

The NASA point-of-contact for this program is:

Ms. Vicki Elsbernd
Program Executive
Flight Programs Division
Office of Space Science, Code SD
NASA Headquarters
Washington, DC 20546
Telephone: 202-358-2499
Facsimile: 202-358-3096

The GSFC point-of-contact for this mission is:

Ms. Abigail Harper
Project Manager
Solar Terrestrial Program Office, Mail Code 460.0
Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: 301-286-5897
Facsimile: 301-286-1696

The IMPACT Principal Investigator is:

Dr. Janet Luhmann
University of California, Berkeley
Space Sciences Laboratory
Centennial Drive at Grizzly Peak Boulevard
Berkeley, CA 94720
Telephone: 510-642-2545
Facsimile: 510-643-8302

The SEP package point-of-contact is:

Dr. Tycho von Rosinvinge
Co-Investigator
Mail Code 661.0
Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: 301-286-6721
Facsimile: 301-286-1682

The ESA point-of-contact for this program is:

Dr. B. G. Taylor
Head, per interim, Space Science Department of the European Space Agency
European Space and Technology Centre
ESA/ESTEC, 2200 AG
Noordwijk,
The Netherlands
Telephone: 31-71-565-3552
Facsimile: 31-71-565-3583

The ESTEC Co-Investigators for this program are:

Dr. R. G. Marsden
Space Science Department
European Space Agency
ESA/ESTEC, 2200 AG
Noordwijk
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Telephone: 31-71-565-3583
Facsimile: 31-71-565-4697

Dr. Trevor Sanderson
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European Space Agency
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Telephone: 31-71-565-3577
Facsimile: 31-71-565-4697

FINANCIAL ARRANGEMENTS

Each Party will bear the costs of discharging its respective responsibilities, including travel and subsistence of its own personnel and transportation of all equipment for which

it is responsible. It is understood that the ability of the Parties to carry out their obligations is subject to the availability of funds.

DATA RIGHTS

The Parties have access to and use of the scientific data generated under this Agreement. In accordance with criteria established in the NASA solicitation AO 99-OSS-01 for science participation in the STEREO mission, the STEREO data will be treated as a public resource and will be made available for public access as soon as is practical. After the initial spacecraft check out and calibration period of approximately 3 months, the STEREO database and requisite basic analysis software will be made available to the international community through a NASA data center. After the initial period, the data will be made public with no more than a two-month delay.

EXCHANGE OF TECHNICAL DATA AND GOODS

The Parties are obligated to transfer only those technical data (including software) and goods necessary to fulfill their respective responsibilities under this Agreement, in accordance with the following provisions:

1. The transfer of technical data for the purpose of discharging the Parties' responsibilities with regard to interface, integration, and safety shall normally be made without restriction, except as required by national laws and regulations relating to export control or the control of classified data. If design, manufacturing, and processing data and associated software, which is proprietary but not export controlled, is necessary for interface, integration, or safety purposes, the transfer shall be made and the data and associated software shall be appropriately marked.

2. All transfers of proprietary technical data and export-controlled goods and technical data are subject to the following provisions. In the event a Party finds it necessary to transfer goods which are subject to export controls or technical data which is proprietary or subject to export control, and for which protection is to be maintained, such goods shall be specifically identified and such technical data shall be marked with a notice to indicate that they shall be used and disclosed by the receiving Party and its related entities (e.g., contractors and subcontractors) only for the purposes of fulfilling the receiving Party's responsibilities under the programs implemented by this Agreement, and that the identified goods and marked technical data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing Party. The receiving Party agrees to abide by the terms of the notice, and to protect any such identified goods and marked technical data from unauthorized use and disclosure, and also agrees to obtain these same obligations from its related entities prior to the transfer.

3. All goods, marked proprietary data, and marked or unmarked technical data subject to export control, which is transferred under this Agreement, shall be used

by the receiving Party exclusively for the purposes of the programs implemented by this Agreement.

4. Title to all hardware to be exchanged under this Agreement will be retained by the Party providing the item.

INVENTION AND PATENT RIGHTS

Nothing in this Agreement shall be construed as granting or implying any rights to, or interest in, patents or inventions of the Parties or their contractors or subcontractors. In the event that an invention is jointly made by employees of the Parties, their contractors or subcontractors, during the implementation of this agreement, the Parties shall consult and agree as to the responsibilities and costs of actions to be taken to establish and maintain patent protection (in any country) for such invention and on the terms and conditions of any license or other rights to be exchanged or granted by or between the Parties.

LIABILITY AND RISK OF LOSS

With regard to activities undertaken pursuant to this Agreement, neither Party shall make any claim against the other, employees of the other, the other's related entities (e.g., contractors, subcontractors, investigators, or their contractors or subcontractors), or employees of the other's related entities for any injury to, or death of, its own employees or employees of its related entities, or for damage to or loss of its own property or that of its related entities, whether such injury, death, damage or loss arises through negligence or otherwise.

The Parties further agree to use all reasonable efforts to extend this provision as set forth above to their own related entities by requiring them, by contract or otherwise, to waive all claims against the other Party and its related entities against any claim for injury, death, damage or loss arising from activities undertaken pursuant to this Agreement.

This cross-waiver of liability shall not be applicable to:

1. Claims between a Party and its own related entity or between its own related entities;

2. Claims made by a natural person, his/her estate, survivors or subrogates for bodily injury, other impairment of health, or death of such natural person;

3. Claims for damage caused by willful misconduct;

4. Intellectual property claims;

5. Claims for damage based upon a failure of the Parties to extend the provision as set forth above or from a failure of the Parties to ensure that their related entities extend the provision as set forth above; or

6. Contract claims between the Parties based on express contractual provisions.

Nothing in this section shall be construed to create the basis for a claim or suit where none would otherwise exist.

CUSTOMS CLEARANCE

NASA and ESA will arrange for timely, free customs clearance of equipment and data required for this project. In the event that any customs duty, fees and/or taxes of any kind are levied by the governments of the Parties on the equipment and related goods for the execution of this Agreement, and after seeking the necessary free customs clearance and waiver of applicable customs duties and taxes, such customs duty, fees and/or taxes shall be borne by the Party of the country levying the customs duty, fees and/or taxes. Such arrangements shall be reciprocal and in accordance with the respective national laws and regulations of the Parties.

PUBLIC INFORMATION

Release of public information regarding this program may be made by the appropriate agency for its own portion of the program as desired and, insofar as participation of the other is involved, after suitable consultation.

CONSULTATIONS/SETTLEMENT OF DISPUTES

The Parties shall consult promptly with each other on all issues involving interpretation or implementation of this MOU, implementing arrangement and resulting annexes as specified.

Any matter that has not been settled in accordance with the above paragraph shall be referred to the NASA Program Executive and the ESA Space Science Department Head. These program managers will attempt to resolve all issues arising from the implementation of this agreement. If they are unable to come to agreement on any issue, then the dispute will be referred to the agreement signatories, or their designated representatives for joint resolution. If the Parties are unable to resolve the dispute, the NASA signatory will issue a final written decision on behalf of NASA.

MISHAP INVESTIGATIONS

In the case of a mishap or mission failure, the Parties agree to provide assistance to each other in the conduct of any investigation. In the case of activities which might result in the death of, or serious injury to persons, or substantial loss of, or damage to property as a result of activities under this agreement, the Parties agree to establish a process for

investigating each such mishap as part of their program/project implementation agreements.

ENTRY INTO FORCE AND TERMINATION

This Letter of Agreement will go into effect upon the date of ESA's affirmative reply. It will remain in force until December 31, 2007, or until the entry into force of a NASA/ESA STEREO MOU, whichever occurs first. It may be extended or amended by mutual written agreement of the Parties. This Agreement can be terminated by NASA or ESA after six months' written notice of its intention to terminate the Agreement.

If the above terms and conditions are acceptable to ESA, we propose that this letter, together with your affirmative reply, document our joint understanding as to the implementation of this cooperative effort.

Sincerely,

P. Diane Rausch
Director
Space Science and Aeronautics Division
Office of External Relations

460 AGMT 0010

APR 24 2001

Deutsches Zentrum für Luft- und Raumfahrt e.V. German Aerospace Center

DLR

DLR Corporate Development and External Relations
D-51170 Köln, Germany

Corporate Development and External Relations Direction

Mrs. P. Diane Rausch
Director
Space Science and Aeronautics Division
Office of External Relations

National Aeronautics and Space Administration
Headquarters
Washington, DC 20546-0001

Your letter
Your reference
Our reference
Your correspondent Karsten Beneke
Telephone +49 22 03 6 01- 3573
Telefax +49 22 03 6 57 90
E-mail karsten.beneke@dlr.de
Köln, 03/26/01

STEREO

Dear Mrs. Rausch,

Referring to your letter dated 20 March 2001 concerning our cooperation on the Solar Terrestrial Relations Observatory (STEREO) mission, we are pleased to inform you that the terms and conditions detailed therein are acceptable to DLR.

We therefore consider that the above letter together with this affirmative reply document our joint understanding as to the implementation of this activity.

Sincerely,

i.V.
Karsten Beneke
Head
Corporate Development
and External Relations

i.V.
Klaus Berge
Director
Space Projects

460-A6MT-0010

National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001

APR 24 2001

Reply to Attn of: IS

MAR 30 2001

TO: Distribution

FROM: IS/International Programs Specialist

SUBJECT: Corrected Letter of Agreement with the German Aerospace Center on the STEREO Mission

A version of the Letter of Agreement (LOA) with the German Aerospace Center on the STEREO mission was inadvertently circulated with an incorrect date stamp. The date on the LOA has been corrected to March 20, 2001. The corrected version of the LOA is enclosed.

Kent Bress

Enclosure

Distribution:

ID/Mr. Tucker
IS/Ms. Rausch
Mr. Ballard
Ms. Copeland
Dr. Miller
Mr. Newman
Mr. Tawney
GS/Mr. Steptoe
S/Dr. Weiler
Dr. Withbroe
Dr. Allen
SD/Mr. Ledbetter
Ms. Elsbernd

Prep: kbress March 30, 2001
File: IS Chron, KB Chron

National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001

Reply to Attn of: IS

MAR 20 2001

Mr. Karsten Beneke
German Aerospace Center (DLR)
Königswinterer Straße 522-524
D-53227 Bonn
Germany

Dear Mr. Beneke:

The National Aeronautics and Space Administration (NASA) and the German Aerospace Center (DLR) have a mutual interest in pursuing cooperation on the Solar Terrestrial Relations Observatory (STEREO) mission. The purpose of this letter is to establish an Agreement between NASA and DLR (hereinafter, "the Parties") to address our cooperation on the STEREO mission.

STEREO is a major mission in the NASA Solar Terrestrial Probes Program within the NASA Sun-Earth Connection theme in the Office of Space Science. STEREO will unveil the Sun in three dimensions for the first time. Its objective is to address the origin, evolution and interplanetary consequences of one of the most massive disturbances in our solar system called the coronal mass ejection (CME). This will be achieved by sending two identically instrumented spacecraft, both at 1 Astronomical Unit orbit around the Sun, but one flying well ahead of the Earth and one behind the Earth.

The instrument suite for STEREO will characterize the CME plasma all the way from the solar surface to the orbit of the Earth. These instruments will measure physical characteristics of CMEs with remote sensing and local sensing instruments, allowing scientists to determine solar origins of CMEs, their propagation into the interplanetary medium and ultimately their consequences on Earth's magnetic field. By viewing CMEs in three dimensions, STEREO will be able to pinpoint their speed and distance from Earth, and thus more accurately time the arrival of the plasma cloud at the Earth.

The NASA Headquarters Office of Space Science solicited proposals for science participation in the STEREO mission including the opportunity for international collaboration in April 1999, in Announcement of Opportunity (AO) 99-OSS-01, and made selections in November 1999. Four instrument suites were selected, as follows:

- Sun Earth Connection Coronal and Heliospheric Investigation (SECCHI) comprised of five instruments and led by Dr. Russell Howard of the Naval Research Laboratory;
- In Situ Measurement of Particles & Coronal Mass Ejection Transients (IMPACT) comprised of four instruments and led by Dr. Janet Luhmann from the University of California at Berkeley;
- SWAVES: Solar Terrestrial Relationship Observatory/Waves comprised of three instruments and led by Dr. Jean Louis H. Bougeret from the Centre National de la Recherche Scientifique Observatoire de Paris; and,
- Plasma and Suprathermal Ion and Composition (PLASTIC) led by Dr. Antoinette Galvin from the University of New Hampshire.

Co-Investigators from three German institutions were selected to provide portions of instruments for the SECCHI, IMPACT, and PLASTIC suites as follows.

- The University of Kiel was selected to provide the Solar Electron Proton Telescope (SEPT) detectors for the Solar Energetic Particles (SEP) package in the IMPACT instrument suite and the doors for the white light inner (COR1) and outer (COR2) coronagraphs and Extreme Ultraviolet Imager (EUVI) instrument in the SECCHI instrument suite.
- The Max Planck Institut für Aeronomie was selected to provide the time-of-flight electronics for the Suprathermal Ion Telescope (SIT) detectors that are part of the SEP package and the engineering support for the SECCHI doors being fabricated by the University of Kiel.
- The Max Planck Institut für Extraterrestrische Physik (MPE) was selected to provide the following for the PLASTIC instrument suite: the Time-to-Amplitude Converter (TAC) boards; the carbon foils; the nickel grids; the vibration dampers; and, the test facility and personnel to perform vibration qualification for PLASTIC instrument suite.

Pursuant to this Letter of Agreement, and within the context of the German involvement noted above, DLR will use reasonable efforts to carry out the following responsibilities:

1. Provide the design, fabrication, and delivery of SEPT detectors for the SEP package in the IMPACT instrument suite on each of two identically-instrumented spacecraft;
2. Provide the design, fabrication, delivery and integration of time-of-flight electronics for the SIT, a part of the SEP package in the IMPACT instrument suite on each of two identically-instrumented spacecraft;
3. Provide the assembly, integration, and checkout of the SEPT, part of the SEP package in the IMPACT instrument suite on each of two identically-instrumented spacecraft;
4. Provide interface documentation (data, thermal, mechanical, electrical, etc.) to support the development, integration, and testing of the SEPT instrument into the SEP package in the IMPACT instrument suite;

5. Provide the design, fabrication, qualification, delivery and integration of doors for the COR1 and COR2 coronagraphs and EUVI instrument, part of the SECCHI instrument suite on each of two identically-instrumented spacecraft;
6. Provide the design, fabrication, and delivery of door mechanisms for the COR1, COR2, and EUVI instruments, part of the SECCHI instrument suite on each of two identically-instrumented spacecraft;
7. Provide the design, fabrication, and delivery of TAC boards, carbon foils, nickel grids, and vibration dampers for the PLASTIC instrument on each of two identically-instrumented spacecraft and one flight spare;
8. Provide the use of the Vibration Test Facility and personnel at the MPE to support the vibration qualification of the PLASTIC instrument suite;
9. Provide the ground support equipment to support the integration, assembly, and test of DLR contributions to the SECCHI instrument suite and integration of the PLASTIC instrument suite onto the STEREO spacecraft;
10. Provide appropriate spare parts, design and interface drawings, documentation, calibration, electrical harnesses, purge plumbing, engineering models, and simulators as required for DLR contributions to the IMPACT, SECCHI, and PLASTIC instrument suites;
11. Participate in the definition and development of performance requirements and interfaces;
12. Provide support for DLR Co-Investigators during development and mission operations;
13. Support participation in the Science Working Group, the STEREO spacecraft and instrument meetings, and post-launch mission operations and data analyses; and,
14. Report on the schedule and performance of DLR contributions to the respective STEREO instrument leads.

NASA will use reasonable efforts to carry out the following responsibilities:

1. Provide overall project management for the STEREO mission;
2. Design and build the STEREO spacecraft;
3. Provide functional requirements for the following DLR-provided hardware: the SEPT detectors for the SEP package in the IMPACT instrument suite; the doors and door mechanisms for the COR1, COR2, and EUVI instruments in the SECCHI instrument suite; the time-of-flight electronics for the SIT that is a part of the SEP package; the assembly, test, and integration of the SEPT detectors for the SEP package in the IMPACT instrument suite; and, the TAC boards, carbon foils, nickel grids, and vibration dampers for the PLASTIC instrument suite;
4. Provide interface (electrical, mechanical, software) specifications for DLR-provided hardware as given in item #3 of the NASA responsibilities;
5. Provide performance assurance requirements to DLR-funded investigators;
6. Manage DLR-provided hardware and software contributions delivered to the United States of America (U.S.);
7. Provide the PLASTIC and SECCHI Data Processing Unit (DPU) Flight Unit and/or Simulator to DLR-funded investigators for testing with DLR-provided instruments as required;

8. Provide the DPU-to-spacecraft interface information for the PLASTIC instrument suite;
9. Provide necessary SECCHI, and PLASTIC U.S. hardware to DLR-funded investigators for integration with, and testing of DLR-provided equipment;
10. Provide final assembly and testing of the IMPACT, SECCHI, and PLASTIC instrument suites;
11. Assure that DLR-funded Co-Investigators will have full rights to the STEREO data in accordance with the NASA Science Management Plan for STEREO;
12. Release science data in a manner consistent with NASA STEREO science data policy;
13. Launch the STEREO spacecraft; and,
14. Manage flight operations and testing and post-launch data analysis.

NASA and DLR (the Parties) will provide on occasion, as mutally agreed, for personnel from NASA and the DLR-funded institutions to visit one another's facilities to participate in integration and testing, and to observe, confer and advise the other Party in regard to aspects of design and development of compatible instrument interfaces, integration, and testing.

POINTS OF CONTACT

The NASA point-of-contact for this program is:

Ms. Vicki Elsbernd
Program Executive
Flight Programs Division
Office of Space Science, Code SD
NASA Headquarters
Washington, DC 20546
Telephone: 202-358-2499
Facsimile: 202-358-3096

The NASA Goddard Space Flight Center point-of-contact for this mission is:

Ms. Abigail Harper
Project Manager
Solar Terrestrial Program Office, Mail Code 460.0
NASA Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: 301-286-5897
Facsimile: 301-286-1696

The IMPACT Principal Investigator is:

Dr. Janet Luhmann
University of California, Berkeley
Space Sciences Laboratory
Centennial Drive at Grizzly Peak Boulevard
Berkeley, CA 94720
Telephone: 510-642-2545
Facsimile: 510-643-8302

The SEP package point-of-contact is:

Dr. Tycho von Rosinvinge
Co-Investigator
Mail Code 661.0
NASA Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: 301-286-6721
Facsimile: 301-286-1682

The SECCHI Principal Investigator is:

Dr. Russell Howard
Naval Research Laboratory
Code 7660
4555 Overlook Avenue SW
Washington, DC 20375-5352
Telephone: 202-767-3137
Facsimile: 202-767-5636

The PLASTIC Principal Investigator is:

Dr. Antoinette Galvin
University of New Hampshire
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Durham, NH 03824-3525
Telephone: 603-862-3511
Facsimile: 603-862-0311

DLR points-of-contact for this program are:

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Prof. Rainer Schwenn
Max-Planck-Institut fuer Aeronomie
37191 Katlenburg-Lindau
Germany
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Dr. Volker Bothmer
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37191 Katlenburg-Lindau
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Facsimile: 49 5556 979 240

The point-of-contact at the Max Planck Institut für Extraterrestrische Physik is:

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Max Planck Institut für Extraterrestrische Physik
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Facsimile: 49 89 30000 3569

The points-of-contact at the University of Kiel are:

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24118 Kiel
Germany
Telephone: 49 431 880 3227
Facsimile: 49 431 85660

Mr. Horst Kunow
Institut für Experimentelle und Angewandte Physik
University of Kiel
24118 Kiel
Germany
Telephone: 49 431 880 2487
Facsimile: 49 431 85660

FINANCIAL ARRANGEMENTS

Each Party will bear the costs of discharging its respective responsibilities, including travel and subsistence of its own personnel and transportation of all equipment for which it is responsible. It is understood that the ability of the Parties to carry out their obligations is subject to the availability of funds.

DATA RIGHTS

The Parties have access to and use of the scientific data generated under this Agreement. In accordance with criteria established in the NASA solicitation for science participation in the STEREO mission, the STEREO data will be treated as a public resource and will be made available for public access as soon as is practical. After the initial check out and calibration period of approximately 3 months after initial operation, the STEREO database and requisite basic analysis software will be made available to the international community through a NASA data center. After the initial period, the data will be made public with no more than a two-month delay.

EXCHANGE OF TECHNICAL DATA AND GOODS

The Parties are obligated to transfer only those technical data (including software) and goods necessary to fulfill their respective responsibilities under this Agreement, in accordance with the following provisions:

1. The transfer of technical data for the purpose of discharging the Parties' responsibilities with regard to interface, integration, and safety shall normally be made without restriction, except as required by national laws and regulations relating to export control or the control of classified data. If design, manufacturing, and processing data and associated software, which is proprietary but not export controlled, is necessary for interface, integration, or safety purposes, the transfer shall be made and the data and associated software shall be appropriately marked.

2. All transfers of proprietary technical data and export-controlled goods and technical data are subject to the following provisions. In the event a Party finds it necessary to transfer goods which are subject to export controls or technical data which is proprietary or subject to export control, and for which protection is to be maintained, such goods shall be specifically identified and such technical data shall be marked with a notice to indicate that they shall be used and disclosed by the receiving Party and its related entities (e.g., contractors and subcontractors) only for the purposes of fulfilling the receiving Party's responsibilities under the programs implemented by this Agreement, and that the identified goods and marked technical data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing Party. The receiving Party agrees to abide by the terms of the notice, and to protect any such identified goods and marked technical data from unauthorized use and disclosure, and also agrees to obtain these same obligations from its related entities prior to the transfer.

3. All goods, marked proprietary data, and marked or unmarked technical data subject to export control, which is transferred under this Agreement, shall be used by the receiving Party exclusively for the purposes of the programs implemented by this Agreement.

4. Title to all hardware to be exchanged under this Agreement will be retained by the Party providing the item.

INVENTION AND PATENT RIGHTS

Nothing in this Agreement shall be construed as granting or implying any rights to, or interest in, patents or inventions of the Parties or their contractors or subcontractors. In the event that an invention is jointly made by employees of the Parties, their contractors or subcontractors, during the implementation of this agreement, the Parties shall consult and agree as to the responsibilities and costs of actions to be taken to establish and maintain patent protection (in any country) for such invention and on the terms and

conditions of any license or other rights to be exchanged or granted by or between the parties.

LIABILITY AND RISK OF LOSS

With regard to activities undertaken pursuant to this Agreement, neither Party shall make any claim against the other, employees of the other, the other's related entities (e.g., contractors, subcontractors, investigators, or their contractors or subcontractors), or employees of its related entities for any injury to or death of its own employees or employees of its related entities, or for damage to or loss of its own property or that of its related entities, whether such injury, death, damage or loss arises through negligence or otherwise.

The Parties further agree to use all reasonable efforts to extend this provision as set forth above to their own related entities by requiring them, by contract or otherwise, to waive all claims against the other Party and its related entities against any claim for injury, death, damage or loss arising from activities undertaken pursuant to this Agreement.

This cross-waiver of liability shall not be applicable to:

1. Claims between a Party and its own related entity or between its own related entities;

2. Claims made by a natural person, his/her estate, survivors or subrogees for bodily injury, other impairment of health, or death of such natural person;

3. Claims for damage caused by willful misconduct;

4. Intellectual property claims;

5. Claims for damage based upon a failure of the Parties to extend the provision as set forth above or from a failure of the Parties to ensure that their related entities extend the provision as set forth above; or

6. Contract claims between the Parties based on express contractual provisions.

Nothing in this section shall be construed to create the basis for a claim or suit where none would otherwise exist.

CUSTOMS CLEARANCE

In accordance with its laws and regulations, each Party shall facilitate free customs clearance of equipment and data required for this project. In the event that any customs duty, fees and/or taxes of any kind are levied by the governments of the Parties on the equipment and related goods for the execution of this Agreement, and after seeking the necessary free customs clearance and waiver of applicable customs duties and taxes, such

customs duty, fees and/or taxes shall be borne by the Party of the country levying the customs duty, fees and/or taxes. Such arrangements shall be reciprocal and in accordance with the respective national laws and regulations of the Parties.

PUBLIC INFORMATION

Release of public information regarding this program may be made by the appropriate agency for its own portion of the program as desired and, insofar as participation of the other is involved, after suitable consultation.

CONSULTATIONS/SETTLEMENT OF DISPUTES

The Parties shall consult promptly with each other on all issues involving interpretation or implementation of this MOU, implementing arrangement and resulting annexes as specified.

Any matter that has not been settled in accordance with the above paragraph shall be referred to the NASA Program Executive and the appropriate DLR point of contact listed above. These program managers will attempt to resolve all issues arising from the implementation of this agreement. If they are unable to come to agreement on any issue, then the dispute will be referred to the agreement signatories, or their designated representatives for joint resolution. If the Parties are unable to resolve the dispute, the NASA signatory will issue a final written decision on behalf of NASA.

MISHAP INVESTIGATIONS

In the case of a mishap or mission failure, the Parties agree to provide assistance to each other in the conduct of any investigation. In the case of activities which might result in the death of, or serious injury to persons, or substantial loss of, or damage to property as a result of activities under this agreement, the Parties agree to establish a process for investigating each such mishap as part of their program/project implementation agreements.

ENTRY INTO FORCE AND TERMINATION

This Letter of Agreement will go into effect upon the date of DLR's affirmative reply. It will remain in force until the two STEREO spacecraft are on-orbit and operating for 2 years, or December 31, 2007, whichever is earlier. It may be extended or amended by mutual written agreement of the Parties. This Agreement can be terminated by NASA or DLR after six months' written notice of its intention to terminate the Agreement.

If the above terms and conditions are acceptable to DLR, we propose that this letter, together with your affirmative reply, document our joint understanding as to the implementation of this cooperative effort.

Sincerely,

P. Diane Rausch
Director
Space Science and Aeronautics Division
Office of External Relations

MAR 13 2001

cnes
DIRECTION DES RELATIONS INTERNATIONALES

Mrs. Diane Rausch
Director Space Science and
Aeronautics Division
Office of External Relations
NASA Headquarters
WASHINGTON, DC 20546-0001
USA

Fax: 00 1 202 358 3030

Paris, 27 FEV. 2001
n°CNES/DRI/RB-2001.41/ECM/mt

Dear Mrs. Rausch,

This is to acknowledge receipt of your letter dated February 9, 2001, and to thank you.

Our Legal Experts have reviewed this letter and it meets their approval.

Our affirmative reply documents our joint understanding as to the implementation of our cooperative effort in the STEREO mission.

Yours Sincerely,

S/c Plattard

Dr. Serge Plattard
Director of International Relations

Copies:

Kent Bress, NASA HQ
Vicki Elsbernd, NASA HQ
Don Miller, NASA HQ
Dr. Jean-Louis Bougeret, Observatoire de Paris

I-5/A-B

National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001

Reply to Attn of IS

FEB 9 2001

Dr. Serge Plattard
Director of International Relations
Centre National d'Etudes Spatiales (CNES)
2, Place Maurice Quentin
75039 Paris Cedex 01, France

Dear Dr. Plattard:

The National Aeronautics and Space Administration (NASA) and the Centre National d'Etudes Spatiale (CNES) have a mutual interest in pursuing cooperation on the Solar Terrestrial Relations Observatory (STEREO) mission. The purpose of this letter is to establish an Agreement between NASA and CNES (hereinafter, "the Parties") to address our cooperation on the STEREO mission.

STEREO is a major mission in the NASA Solar Terrestrial Probes Program within the NASA Sun-Earth Connection theme in the Office of Space Science. STEREO will unveil the Sun in three dimensions for the first time. Its objective is to address the origin, evolution and interplanetary consequences of one of the most massive disturbances in our solar system called the coronal mass ejection (CME). This will be achieved by sending two identically instrumented spacecraft, both at 1 Astronomical Unit orbit around the Sun, but one flying well ahead of the Earth and one behind the Earth.

The instrument suites for STEREO will characterize the CME plasma all the way from the solar surface to the orbit of the Earth. These instruments will measure physical characteristics of CMEs with remote sensing and local sensing instruments, allowing scientists to determine solar origins of CMEs, their propagation into the interplanetary medium and ultimately their consequences on Earth's magnetic field. By viewing CMEs in three dimensions, STEREO will be able to pinpoint their speed and distance from Earth, and thus more accurately time the arrival of the plasma cloud at the Earth.

The NASA Headquarters Office of Space Science solicited proposals for science participation in the STEREO mission, including the opportunity for international collaboration, in April 1999, in Announcement of Opportunity (AO) 99-OSS-01, and made selections in November 1999. Four instrument suites were selected, as follows:

- Sun Earth Connection Coronal and Heliospheric Investigation (SECCHI) comprised of five instruments and led by Dr. Russell Howard of the Naval Research Laboratory;
- In Situ Measurement of Particles & Coronal Mass Ejection Transients (IMPACT) comprised of four instruments and led by Dr. Janet Luhmann from the University of California at Berkeley;
- Solar Terrestrial Relationship Observatory/Waves (SWAVES) comprised of three instruments and led by Dr. Jean Louis H. Bougeret from the Centre National de la Recherche Scientifique (CNRS) Observatory of Paris; and,
- Plasma and Suprathermal Ion and Composition (PLASTIC) led by Dr. Antoinette Galvin from the University of New Hampshire.

In addition to the selection to provide the SWAVES instrument suite, Co-Investigators from two French institutions were selected to provide portions of instruments for the SECCHI and IMPACT suites as follows.

- The Institut d'Astrophysique Spatiale and the Institut d'Optique Theorique et Appliquee were selected to provide the mirrors and mirror coatings for the Extreme Ultraviolet Imager (EUVI) instrument in the SECCHI instrument suite; and,
- The Centre d'Etude Spatiale des Rayonnements was selected to provide the Solar Wind Electron Analyzer (SWEA) instrument in the IMPACT instrument suite.

Co-investigators from three additional French institutions were selected to provide technical and scientific support as follows: the Laboratoire d'Astronomie; the Observatoire de Meudon; and the University d'Orleans.

Pursuant to this Letter of Agreement and in the context of the French involvement noted above, CNES will use reasonable efforts to carry out the following responsibilities:

1. Provide the design, fabrication, and delivery of the Low, Fixed, and High Frequency Receivers for the SWAVES instrument suite on each of two identically-instrumented spacecraft;
2. Provide the design, fabrication, and delivery of the SWEA instrument for the IMPACT instrument suite on each of two identically-instrumented spacecraft;
3. Provide the mirrors and mirror coatings of the EUVI instrument in the SECCHI instrument suite on each of two identically-instrumented spacecraft;
4. Provide the integration and calibration of the SWAVES instrument suite for two identically-instrumented spacecraft using the facilities at the University of Minnesota, the Time Domain Sampler and data processing unit (DPU) from the University of Minnesota, and the Stacer antennas from the University of California at Berkeley;
5. Provide appropriate spare parts, design and interface drawings, documentation, calibration, electrical harnesses, purge plumbing, and simulators as required for the CNES contributions to the IMPACT, SECCHI, and SWAVES instrument suites;
6. Provide interface documentation (data, thermal, mechanical, electrical, etc.) to support the development, integration, and testing of the CNES contributions to the IMPACT and SECCHI instrument suites;

7. Provide interface documentation (data, thermal, mechanical, electrical, etc.) to support the development, integration, and testing of the SWAVES instrument suite into the STEREO spacecraft;
8. Provide the ground support equipment to support the integration, assembly, and testing of the CNES contributions to the IMPACT and SECCHI instrument suites and integration of the SWAVES instrument suite onto the STEREO spacecraft;
9. Participate in the definition and development of performance requirements and interfaces for NASA-provided instrument and software components;
10. Support participation in Science Working Group meetings, STEREO spacecraft and instrument meetings, and post-launch mission operations and data analyses;
11. Report on the schedule and performance of CNES deliverables to the respective STEREO team leads; and,
12. Provide engineering models as required.

NASA will use reasonable efforts to carry out the following responsibilities:

1. Provide overall project management for the STEREO mission;
2. Design and build the STEREO spacecraft;
3. Provide chemospherical plates for the SWEA instrument;
4. Provide functional requirements for the SWAVES instrument suite, the SWEA instrument, and the components of the EUVI instrument;
5. Provide interface (electrical, mechanical, software) specifications for the SWAVES instrument suite, the SWEA instrument, and the components of the EUVI instrument;
6. Provide performance assurance requirements to CNES;
7. Manage the CNES-provided hardware contributions to the SWAVES instrument suite, the SWEA instrument, and the components of the EUVI instrument delivered to the U.S.;
8. Provide the SWAVES, IMPACT and SECCHI DPU Flight Unit and/or Simulator to CNES-funded investigators for testing with the CNES-provided hardware as required;
9. Provide a SECCHI/EUVI camera for end-to-end calibration of the CNES-provided hardware as required;
10. Provide the DPU-to-spacecraft interface information for the SWAVES instrument suite, and the SWEA instrument;
11. Provide the Stacer Antennas to CNES-funded investigators for testing of the SWAVES instrument;
12. Provide mirror blanks for the SECCHI instrument suite for final polishing and coating by CNES-funded investigators;
13. Provide support for the integration of the EUVI mirrors into the EUVI telescope;
14. Provide final SWAVES and SWEA assembly and testing;
15. Provide necessary IMPACT, SWAVES, and SECCHI U.S. hardware to CNES-funded investigators for integration with, and testing of CNES-provided hardware;
16. Assure that the CNES-funded Principal Investigator and Co-Investigators will have full rights to the STEREO data in accordance with the NASA Science Management Plan for STEREO;

17. Release science data in a manner consistent with NASA STEREO science data policy;
18. Launch the STEREO spacecraft; and,
19. Manage flight operations, testing, and post-launch data analysis.

NASA and CNES (the Parties) will provide on occasion, as mutually agreed, for personnel to visit one another's facilities to participate in integration and testing, and to observe, confer and advise the other Party in regard to aspects of instrument design, development, integration, and testing.

POINTS OF CONTACT

The NASA point-of-contact for this program is:

Ms. Vicki Eisbernd
Program Executive
Flight Programs Division
Office of Space Science, Code SD
NASA Headquarters
Washington, DC 20546
Telephone: 202-358-2499
Facsimile: 202-358-3096

The GSFC point-of-contact for this mission is:

Ms. Abigail Harper
Project Manager
Solar Terrestrial Program Office, Mail Code 460.0
Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: 301-286-5897
Facsimile: 301-286-1696

The IMPACT Principal Investigator is:

Dr. Janet Luhmann
University of California, Berkeley
Space Sciences Laboratory
Centennial Drive at Grizzly Peak Boulevard
Berkeley, CA 94720
Telephone: 510-642-2545
Facsimile: 510-643-8302

The SECCHI Principal Investigator is:

Dr. Russell Howard
Head, Solar Physics Branch
Mail Code 7660
U.S. Naval Research Laboratory
Washington, DC 20375
Telephone: 202-767-2263
Facsimile: 202-767-5636

The CNES point-of-contact for this program is:

Dr. Richard Bonneville
Director of Science Programs
Centre National d'Etudes Spatiates
2, Place Maurice Quentin
75039 Paris Cedex 01, France
Telephone: 33-1-4476-7638

The SWAVES Principal Investigator is:

Dr. Jean-Louis H. Bougeret
Centre National de la Recherche Scientifique Observatory of Paris
Dept. Recherche Spatial
5, Place Jules Janssen
Meudon 92195, France
Telephone: 33-1-4507-7704
Facsimile: 33-1-4507-2806

FINANCIAL ARRANGEMENTS

Each Party will bear the costs of discharging its respective responsibilities, including travel and subsistence of its own personnel and transportation of all equipment for which it is responsible. It is understood that the ability of the Parties to carry out their obligations is subject to the availability of appropriated funds.

DATA RIGHTS

The Parties have access to and use of the scientific data generated under this Agreement. In accordance with criteria established in the NASA solicitation AO 99-OSS-01 for science participation in the STEREO mission, the STEREO data will be treated as a public resource and will be made available for public access as soon as is practical. After the initial spacecraft check out and calibration period of approximately 3 months after initial operation, the STEREO database and requisite basic analysis software will be made available to the international community through a NASA data center. After the initial period, the data will be made public with no more than a two-month delay.

EXCHANGE OF TECHNICAL DATA AND GOODS

The Parties are obligated to transfer only those technical data (including software) and goods necessary to fulfill their respective responsibilities under this Agreement, in accordance with the following provisions:

1. The transfer of technical data for the purpose of discharging the Parties' responsibilities with regard to interface, integration, and safety shall normally be made without restriction, except as required by national laws and regulations relating to export control or the control of classified data. If design, manufacturing, and processing data and associated software, which is proprietary but not export controlled, is necessary for interface, integration, or safety purposes, the transfer shall be made and the data and associated software shall be appropriately marked.

2. All transfers of proprietary technical data and export-controlled goods and technical data are subject to the following provisions. In the event a Party finds it necessary to transfer goods which are subject to export controls or technical data which is proprietary or subject to export control, and for which protection is to be maintained, such goods shall be specifically identified and such technical data shall be marked with a notice to indicate that they shall be used and disclosed by the receiving Party and its related entities (e.g., contractors and subcontractors) only for the purposes of fulfilling the receiving Party's responsibilities under the programs implemented by this Agreement, and that the identified goods and marked technical data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing Party. The receiving Party agrees to abide by the terms of the notice, and to protect any such identified goods and marked technical data from unauthorized use and disclosure, and also agrees to obtain these same obligations from its related entities prior to the transfer.

3. All goods, marked proprietary data, and marked or unmarked technical data subject to export control, which is transferred under this Agreement, shall be used by the receiving Party exclusively for the purposes of the programs implemented by this Agreement.

4. Title to all hardware to be exchanged under this Agreement will be retained by the Party providing the item.

INVENTION AND PATENT RIGHTS

Nothing in this Agreement shall be construed as granting or implying any rights to, or interest in, patents or inventions of the Parties or their contractors or subcontractors. In the event that an invention is jointly made by employees of the Parties, their contractors or subcontractors, during the implementation of this Agreement, the Parties shall consult and agree as to the responsibilities and costs of actions to be taken to establish and

maintain patent protection (in any country) for such invention and on the terms and conditions of any license or other rights to be exchanged or granted by or between the Parties.

LIABILITY AND RISK OF LOSS

With regard to activities undertaken pursuant to this Agreement, neither Party shall make any claim against the other, employees of the other, the other's related entities (e.g., contractors, subcontractors, investigators, or their contractors or subcontractors), or employees of the other's related entities, for any injury to or death of its own employees or employees of its related entities or for damage to or loss of its own property or that of its related entities, whether such injury, death, damage or loss arises through negligence or otherwise.

The Parties further agree to extend this provision as set forth above to their own related entities by requiring them, by contract or otherwise, to waive all claims against the other Party and its related entities and employees of the other Party or of its related entities for injury, death, damage or loss arising from or related to activities undertaken pursuant to this Agreement.

This cross-waiver of liability shall not be applicable to:

1. Claims between a Party and its own related entity or between its own related entities;

2. Claims made by a natural person, his/her estate, survivors or subrogees for bodily injury, other impairment of health, or death of such natural person, except where the Party is the subrogee;

3. Claims for damage caused by willful misconduct;

4. Intellectual property claims;

5. Claims for damage based upon a failure of the Parties to extend the provision as set forth above or from a failure of the Parties to ensure that their related entities extend the provision as set forth above; or

6. Contract claims between the Parties based on express contractual provisions.

Nothing in this section shall be construed to create the basis for a claim or suit where none would otherwise exist.

CUSTOMS CLEARANCE

NASA and CNES will arrange for timely, free customs clearance of equipment and data required for this project. In the event that any customs duty, fees and/or taxes of any kind

are levied by the governments of the Parties on the equipment and related goods for the execution of this Agreement, and after seeking the necessary free customs clearance and waiver of applicable customs duties and taxes, such customs duty, fees and/or taxes shall be borne by the Party of the country levying the customs duty, fees and/or taxes. Such arrangements shall be reciprocal and in accordance with the respective national laws and regulations of the Parties.

PUBLIC INFORMATION

Release of public information regarding this program may be made by the appropriate agency for its own portion of the program as desired and, insofar as participation of the other is involved, after suitable consultation.

CHOICE OF LAW

The Parties hereby designate the U.S. Federal law to govern this Agreement for all purposes, including, but not limited to, determining the validity of the Agreement, the meaning of its provisions, and the rights, obligations, and remedies of the Parties.

CONSULTATIONS/SETTLEMENT OF DISPUTES

The Parties agree to consult each other promptly when events occur or matters arise which may occasion a question of interpretation or implementation of this Agreement. Such consultation shall follow the normal chain of authority within each organization. If the Parties are unable to resolve the dispute, the NASA signatory will issue a final written decision on behalf of NASA.

MISHAP INVESTIGATIONS

In the case of a mishap or mission failure, the Parties agree to provide assistance to each other in the conduct of any investigation. In the case of activities which might result in the death of, or serious injury to persons, or substantial loss of, or damage to property as a result of activities under this Agreement, the Parties agree to establish a process for investigating each such mishap as part of their program/project implementation agreements.

ENTRY INTO FORCE AND TERMINATION

This Letter of Agreement will go into effect upon the date of CNES's affirmative reply. It will remain in force until the two STEREO spacecraft are on-orbit and operating for 2 years, or December 31, 2007, whichever is earlier. It may be extended or amended by mutual written agreement of the Parties. This Agreement can be terminated by NASA or CNES after six months' written notice of its intention to terminate the Agreement.

If the above terms and conditions are acceptable to CNES, we propose that this letter, together with your affirmative reply, document our joint understanding as to the implementation of this cooperative effort.

Sincerely,

P. Diane Rausch
Director
Space Science and Aeronautics Division
Office of External Relations

460-AGMT-0006

SSO
Büro für Weltraumangelegenheiten
Bureau des affaires spatiales
Ufficio delle questioni spaziali
Swiss Space Office

MAR 13 2001

Peter Creola

Mrs P. Diane Rausch
Director
Space Science & Aeronautics Div.
Office of External Relations
NASA Headquarters
Washington, D.C. 20546
USA
By FAX: 001 202 358 3030 (1 page)

Our ref.: 01_006BT.doc/BT (891.862-11)

CH - 3003 Berne, January 24, 2001

Letter agreement between NASA and Switzerland on PLASTIC/STEREO

Dear Mrs Rausch

We are pleased to learn that Dr Robert Wimmer from the Physikalisches Institut at the University of Bern NASA has been selected as CoI in the PLASTIC instrument which will fly on the NASA STEREO mission.

The terms and conditions for this collaboration - as outlined in your letter of January 23, 2001 - are perfectly acceptable to us. Therefore, both your letter and this reply shall document our understanding as to the implementation of this co-operative activity.

We would like to express our satisfaction you provide Swiss scientists with the opportunity to participate in this highly interesting programme. We will deploy our best efforts to render this co-operation fruitful.

Sincerely,

Peter Creola
Head of Swiss Space Office

Cc: - Dr R. Wimmer, University of Bern
- Embassy of Switzerland, Washington

Adresse: SSO, Hallwylstrasse 4, CH-3003 Bern, tel.: +41 31 324 10 74, fax: +41 31 324 23 80
E-mail: Peter.Creola@sso.adr A-36 , direct: +41 31 322 99 67

National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001

eply to Attn of IS

JAN 23 2001

Dr. Stéphane Berthet
Swiss Space Office (SSO)
Hallwylstraße 4
CH-3003 Bern
Switzerland

Dear Dr. Berthet:

In April 1999, NASA's Office of Space Science solicited proposals for scientific participation in the Solar Terrestrial Relations Observatory (STEREO) mission. Selections were made in November 1999. The STEREO mission is a major part of NASA's Solar Terrestrial Probes Program, and its objective is to address the origin, evolution and interplanetary consequences of the coronal mass ejection (CME), one the most massive disturbances in our solar system. This will be achieved by sending two identically instrumented spacecraft, both at 1 Astronomical Unit orbit around the Sun, but one flying well ahead of the Earth and one behind the Earth. Among the instrument suites that were selected was the Plasma and Suprathermal Ion and Composition (PLASTIC) instrument, led by Dr. Antoinette Galvin from the University of New Hampshire.

Dr. Robert F. Wimmer-Schweingruber from the Physikalisches Institut at the University of Bern was selected as a Co-Investigator to provide a portion of the PLASTIC instrument suite, with support from the Swiss National Science Foundation (SNSF). The University of New Hampshire, under a NASA contract to develop the PLASTIC instrument, will temporarily export flight and engineering instrument units, components, and documentation to support the instrument development and calibration. The items that will be temporarily exported to the University of Bern to support the PLASTIC instrument suite development are included in the list of U.S. responsibilities.

STEREO's instrument suite will characterize the CME plasma all the way from the solar surface to the orbit of the Earth. These instruments will measure physical characteristics of CMEs with remote sensing and local sensing instruments, allowing scientists to determine solar origins of CMEs, their propagation into the interplanetary medium and ultimately their consequences on Earth's magnetic field. By viewing CMEs in three dimensions, STEREO will be able to pinpoint their speed and distance from Earth, and thus more accurately time the arrival of the plasma cloud at the Earth.

In order to fulfill the requirements of the STEREO mission, we propose the following arrangements to implement this cooperative effort:

The University of Bern, Switzerland, supported by SNSF, will use reasonable efforts to:

1. Provide design, fabrication, test documentation, calibration, and delivery of the Solid State Detectors (SSDs) under conditions relevant for the PLASTIC instrument suite for each of two identically-instrumented spacecraft;
2. Provide the design, fabrication, and delivery of two tested and calibrated flight model and one engineering model/flight spare Electrostatic Analyzers (ESA) sections (including the ESA, the solar wind collimator, proton/alpha guiding electrodes and portions of the associated outer housings, cover, and cover actuators) and associated documentation (not including qualification tests for the cover and actuator and surface treatment of the cover and cover actuator or parts thereof);
3. Provide mechanical piece parts for instrument assembly and associated documentation;
4. Provide particle accelerators and vacuum chambers for instrument test and calibration;
5. Participate in technical discussions for the PLASTIC instrument suite including the ESA sections, time of flight (TOF) and SSD assembly sections, associated high voltage design, cover and actuator, outer housings, associated electronics, and the PLASTIC integrated data processing unit (IDPU) requirements;
6. Participate in the definition and development of performance requirements and interfaces for NASA-provided instrument components.
7. Support participation in Science Working Group and STEREO spacecraft and instrument meetings; and,
8. Report on the schedule and performance of Swiss deliverables to the respective STEREO instrument leads.

NASA will use reasonable efforts to carry out the following responsibilities:

1. Provide overall project management for the STEREO mission;
2. Design and build the STEREO spacecraft;
3. Provide functional requirements for the SNSF-provided hardware as described in items #1 and #2 of the SNF responsibilities and associated mounting parts and other relevant parts;
4. Provide interface (electrical, mechanical, software) specifications for SNSF-provided hardware listed in item #3 of the NASA responsibilities;
5. Provide performance assurance requirements to the University of Bern;
6. Manage the SNSF-provided hardware and software to contributions delivered to the U.S.;
7. Provide the PLASTIC Data Processing Unit (DPU) Flight Unit and/or Simulator to the University of Bern for testing with the instrument as required;
8. Provide the DPU-to-spacecraft interface information for the PLASTIC instrument suites;

9. Provide necessary PLASTIC U.S. hardware to the University of Bern for integration with and testing of University of Bern-provided hardware as follows:
   a) Two PLASTIC flight models and one PLASTIC engineering model upgraded to the flight spare;
   b) One complete engineering model and two flight models of the PLASTIC TOF and electronics-box assemblies (including voltage converters and Classifier boards) and any required subassemblies and their interfacing parts for calibration and chamber testing;
   c) Integrated carbon foils;
   d) Integrated micro-channel plates (MCPs) (4 pair per instrument);
   e) Spare carbon foils in aluminum storage container (16 to 32 carbon foils);
   f) Spare MCPs in storage containers or in spare sub-assembly hardware;
   g) Spare subassemblies for instrument;
   h) Copies of mechanical drawings and electrical schematics for design, fabrication, and assembly of all assemblies and units, and engineering log books and test documentation of all assemblies and units;
   i) Mechanical drawings and electrical schematics for instrument integration and testing at the University of Bern;
   j) Mechanical fixtures for chamber installation;
   k) Electrical/vacuum chamber feed-throughs for calibration testing;
   l) Electrical Ground Support Equipment (GSE) harnesses for calibration testing;
   m) One GSE computer system including 3 personal computers, University of New Hampshire-designed instrument software, analysis software, removable hard drive, external compact disk read/write drive, monitor, and printer;
   n) Electrical and mechanical GSE such as hand tools, soldering irons, miscellaneous discrete electronic components, oscilloscope with probes, protective covers, and shipping containers;
   o) Subsystems of the PLASTIC instrument suite for ion-optical testing including the TOF assembly;
   p) Mechanical drawings and electrical schematics, engineering log books and test documentation for the TOF assembly plus interface documentation for testing;
10. Participate in technical discussions for the PLASTIC instrument suite, the PLASTIC subassemblies, the IDPU, and interfaces;
11. Assure that the University of Bern Co-Investigators will have full rights to the STEREO data in accordance with the NASA Science Management Plan for STEREO;
12. Release science data in a manner consistent with NASA STEREO science data policy;
13. Launch the STEREO spacecraft; and,
14. Manage flight operations.

NASA and the University of Bern (the "Parties") will provide, on occasion as mutually agreed, for personnel from NASA, the University of Bern, and SNSF to visit one another's facilities to participate and support integration and testing activities, and to

observe, confer and advise the other Party in regard to aspects of instrument design, development, integration, and testing.

POINTS OF CONTACT

The NASA point-of-contact for this program is:

Ms. Vicki Elsbernd
Program Executive
Flight Programs Division
Office of Space Science, Code SD
NASA Headquarters
Washington, DC 20546
Telephone: 202-358-2499
Facsimile: 202-358-3096

The GSFC point-of-contact for this mission is:

Ms. Abigail Harper
Project Manager
Solar Terrestrial Program Office, Mail Code 460.0
Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: 301-286-5897
Facsimile: 301-286-1696

The point-of-contact for SSO is:

Dr. Stéphane Berthet
Swiss Space Office (SSO)
Hallwylstraße 4
CH-3003 Bern
Switzerland
Telephone: +41-31-322-99-67
Facsimile: +41-31-324-10-73

The point-of-contact at the University of Bern is:

Dr. Robert F. Wimmer-Schweingruber
Physikalisches Institut
University of Bern
Sidlerstrasse 5,CH-3012 Bern, Switzerland
Telephone: +41-31-631-44-20
Facsimile: +41-31-631-44-05

FINANCIAL ARRANGEMENTS

Each Party will bear the costs of discharging its respective responsibilities, including travel and subsistence of its own personnel and transportation of all equipment for which it is responsible. It is understood that the ability of the Parties to carry out their obligations is subject to the availability of funds.

DATA RIGHTS

The Parties have access to and use of the scientific data generated under this Agreement. In accordance with criteria established in the NASA solicitation for science participation in the STEREO mission, Announcement of Opportunity 99-OSS-01, the STEREO data will be treated as a public resource and will be made available for public access as soon as is practical. After the initial check out and calibration period of approximately 3 months after initial operation, the STEREO database and requisite basic analysis software will be made available to the international community through a NASA data center. After the initial period, the data will be made public with no more than a two-month delay.

EXCHANGE OF TECHNICAL DATA AND GOODS

The Parties are obligated to transfer only those technical data (including software) and goods necessary to fulfill their respective responsibilities under this Agreement, in accordance with the following provisions:

1. The transfer of technical data for the purpose of discharging the parties' responsibilities with regard to interface, integration, and safety shall normally be made without restriction, except as required by national laws and regulations relating to export control or the control of classified data. If design, manufacturing, and processing data and associated software, which is proprietary but not export controlled, is necessary for interface, integration, or safety purposes, the transfer shall be made and the data and associated software shall be appropriately marked.

2. All transfers of proprietary technical data and export-controlled goods and technical data are subject to the following provisions. In the event a Party finds it necessary to transfer goods which are subject to export controls or technical data which is proprietary or subject to export control, and for which protection is to be maintained, such goods shall be specifically identified and such technical data shall be marked with a notice to indicate that they shall be used and disclosed by the receiving Party and its related entities (e.g., contractors and subcontractors) only for the purposes of fulfilling the receiving Party's responsibilities under the programs implemented by this Agreement. and that the identified goods and marked technical data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing party. The receiving party agrees to abide by the terms of the notice. and to protect any such identified goods

and marked technical data from unauthorized use and disclosure, and also agrees to obtain these same obligations from its related entities prior to the transfer.

3. All goods, marked proprietary data, and marked or unmarked technical data subject to export control, which is transferred under this Agreement, shall be used by the receiving party exclusively for the purposes of the programs implemented by this Agreement.

4. Title to all hardware to be exchanged under this Agreement will be retained by the party providing the item.

INVENTION AND PATENT RIGHTS

Nothing in this Agreement shall be construed as granting or implying any rights to, or interest in, patents or inventions of the Parties or their contractors or subcontractors. In the event that an invention is jointly made by employees of the parties, their contractors or subcontractors, during the implementation of this agreement, the parties shall consult and agree as to the responsibilities and costs of actions to be taken to establish and maintain patent protection (in any country) for such invention and on the terms and conditions of any license or other rights to be exchanged or granted by or between the parties.

LIABILITY AND RISK OF LOSS

With regard to activities undertaken pursuant to this Agreement, neither Party shall make any claim against the other, employees of the other, the other's related entities (e.g., contractors, subcontractors, investigators, or their contractors or subcontractors), or employees of its related entities, or for damage to or loss of its own property or that of its related entities, whether such injury, death, damage or loss arises through negligence or otherwise.

The Parties further agree to use all reasonable efforts to extend this provision as set forth above to their own related entities by requiring them, by contract or otherwise, to waive all claims against the other Party and its related entities against any claim for injury, death, damage or loss arising from activities undertaken pursuant to this Agreement.

This cross-waiver of liability shall not be applicable to:

1. Claims between a Party and its own related entity or between its own related entities;

2. Claims made by a natural person, his/her estate, survivors or subrogates for bodily injury, other impairment of health, or death of such natural person;

3. Claims for damage caused by willful misconduct;

4. Intellectual property claims;

5. Claims for damage based upon a failure of the Parties to extend the provision as set forth above or from a failure of the Parties to ensure that their related entities extend the provision as set forth above; or

6. Contract claims between the Parties based on express contractual provisions.

Nothing in this section shall be construed to create the basis for a claim or suit where none would otherwise exist.

CUSTOMS CLEARANCE

NASA and SSO will arrange for timely, free customs clearance of equipment and data required for this project. In the event that any customs duty, fees and/or taxes of any kind are levied by the governments of the Parties on the equipment and related goods for the execution of this Agreement, and after seeking the necessary free customs clearance and waiver of applicable customs duties and taxes, such customs duty, fees and/or taxes shall be borne by the Party of the country levying the customs duty, fees and/or taxes. Such arrangements shall be reciprocal and in accordance with the respective national laws and regulations of the Parties.

PUBLIC INFORMATION

Release of public information regarding this program may be made by the appropriate agency for its own portion of the program as desired and, insofar as participation of the other is involved, after suitable consultation.

CONSULTATIONS/SETTLEMENT OF DISPUTES

The parties shall consult promptly with each other on all issues involving interpretation or implementation of this MOU, implementing arrangement and resulting annexes as specified.

Any matter that has not been settled in accordance with the above paragraph shall be referred to the NASA Program Executive and the University of Bern point of contact listed above. These program managers will attempt to resolve all issues arising from the implementation of this agreement. If they are unable to come to agreement on any issue, then the dispute will be referred to the agreement signatories, or their designated representatives for joint resolution. If the parties are unable to resolve the dispute, the NASA signatory will issue a final written decision on behalf of NASA.

MISHAP INVESTIGATIONS

In the case of a mishap or mission failure, the parties agree to provide assistance to each other in the conduct of any investigation. In the case of activities which might result in the death of, or serious injury to persons, or substantial loss of, or damage to property as a result of activities under this agreement, the parties agree to establish a process for investigating each such mishap as part of their program/project implementation agreements.

ENTRY INTO FORCE AND TERMINATION

This Letter of Agreement will go into effect upon the date of SSO's affirmative reply. It will remain in force until the two STEREO spacecraft are on-orbit and operating for 2 years, or December 31, 2007, whichever is earlier. It may be extended or amended by mutual written agreement of the Parties. This Agreement can be terminated by NASA or SSO after six months' written notice of its intention to terminate the Agreement.

If the above terms and conditions are acceptable to SSO, we propose that this letter, together with your affirmative reply, document our joint understanding as to the implementation of this cooperative effort.

Sincerely,

D. Miller/for

P. Diane Rausch
Director
Space Science and Aeronautics Division
Office of External Relations

460-AGMT-0005

MAR 13 2001

Magyar Űrkutatási Iroda

Hungarian Space Office
1054 Budapest, Alkotmány u. 27.
Tel.: (+36-1) 3010-969. Fax: (+36-1) 3010-979
e-mail: hso@hso.hu

MŰI 148/3/2000
Budapest, 15 November 2000

Ms. P. Diane Rausch
Director
Space Science and Aeronautics Division
Office of External Relations
NASA Headquarters, Washington, D.C.

Dear Ms. Rausch,

I have got with thanks the final version of the agreement on cooperative activities between NASA and HSO on the Solar Terrestrial Relations Observatory (STEREO) project.

On reviewing it I hereby send you the affirmative reply of the Hungarian Space Office to document our joint understanding as to the implementation of this cooperative effort.

Sincerely yours,

Dr. Előd Both
Director

National Aeronautics and
Space Administration

Headquarters
Washington, DC 20546-0001

Reply to Attn of

IS

NOV 10 2000

Dr. Elod Both
Director
Hungarian Space Office
1374 Budapest, pf. 565
Hungary

Dear Dr. Both:

In April 1999, NASA's Office of Space Science solicited proposals for scientific participation in the Solar Terrestrial Relations Observatory (STEREO) mission. Selections were made in November 1999. The STEREO mission is a major part of NASA's Solar Terrestrial Probes Program, and its objective is to address the origin, evolution and interplanetary consequences of the coronal mass ejection (CME), one the most massive disturbances in our solar system. This will be achieved by sending two identically instrumented spacecraft, both at 1 Astronomical Unit orbit around the Sun, but one flying well ahead of the Earth and one behind the Earth. Among the instrument suites that were selected was the In Situ Measurement of Particles and CME Transients (IMPACT), led by Dr. Janet Luhmann from the University of California at Berkeley.

Dr. Karoly Kecskemety from the Research Institute for Particle and Nuclear Physics of the Central Research Institute for Physics (KFKI-RMKI) was selected as a Co-Investigator supporting the IMPACT instrument suite. Dr. Kecskemety will obtain modifications to the University of Michigan's computer model to make it applicable for STEREO data interpretation.

STEREO's instrument suite will characterize the CME plasma all the way from the solar surface to the orbit of the Earth. These instruments will measure physical characteristics of CMEs with remote sensing and local sensing instruments, allowing scientists to determine solar origins of CMEs, their propagation into the interplanetary medium and ultimately their consequences on Earth's magnetic field. By viewing CMEs in three dimensions, STEREO will be able to pinpoint their speed and distance from Earth, and thus more accurately time the arrival of the plasma cloud at the Earth.

In order to fulfill the requirements of the STEREO mission, we propose the following arrangements to implement this cooperative effort:

Pursuant to this Letter of Agreement and in the context of the involvement of KFKI-RMKI noted above, the Hungarian Space Office will use reasonable efforts to carry out the following responsibilities:

1. Provide support to develop, modify, test, and run modeling software that will be used to interpret the IMPACT instrument measurements;
2. Provide support for the KFKI-RMKI Co-Investigator during development and mission operations;
3. Support participation in the Science Working Group, the STEREO spacecraft and instrument meetings, and post-launch mission operations and data analyses; and,
4. Report on the schedule and performance of the KFKI-RMKI contribution to the IMPACT instrument on the STEREO mission.

NASA will use reasonable efforts to:

1. Provide overall project management for the STEREO mission;
2. Design and build the STEREO spacecraft;
3. Provide functional requirements for the necessary software developments to KFKI-RMKI;
4. Provide the KFKI-RMKI Co-Investigator access to the source code for the computer model for data interpretation at the University of Michigan;
5. Provide the KFKI-RMKI Co-Investigator access to the University of Michigan's computer during his modifications to the computer model at the University of Michigan to make the model applicable to STEREO/IMPACT data interpretation;
5. Assure that the KFKI-RMKI Co-Investigator will have full rights to the STEREO data in accordance with the NASA Science Management Plan for STEREO;
6. Release science data in a manner consistent with NASA STEREO science data policy;
7. Launch the STEREO spacecraft;
8. Manage flight operations and testing and post-launch data analysis.

NASA and KFKI-RMKI will provide, on occasion, as mutually agreed, for personnel to visit one another's facilities to participate in integration and testing, and to observe, confer and advise the other Party in regard to aspects of design and development of compatible instrument interfaces integration and testing.

POINTS OF CONTACT

The NASA point-of-contact for this program is:

Ms. Vicki Elsbernd
Program Executive
Flight Programs Division
Office of Space Science, Code SD
NASA Headquarters
Washington, DC 20546
Telephone: 202-358-2499
Facsimile: 202-358-3096

The GSFC point-of-contact for this mission is:

Ms. Abigail Harper
Project Manager
Solar Terrestrial Program Office, Mail Code 460.0
Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: 301-286-5897
Facsimile: 301-286-1696

The IMPACT Principal Investigator is:

Dr. Janet Luhmann
University of California, Berkeley
Space Sciences Laboratory
Centennial Drive at Grizzly Peak Boulevard
Berkeley, CA 94720
Telephone: 510-642-2545
Facsimile: 510-643-8302

The KFKI-RMKI Co-Investigator for this program is:

Dr. Karoly Kecskemety
KFKI Részecske- és Magfizikai Kutatóintézet (RMKI)
POB 49, H-1525 Budapest
Hungary
Telephone: 36 1 3959 302
Facsimile: 36 1 3959 151

FINANCIAL ARRANGEMENTS

Each Party will bear the costs of discharging its respective responsibilities, including travel and subsistence of its own personnel and transportation of all equipment for which it is responsible. It is understood that the ability of the Parties to carry out their obligations is subject to the availability of funds.

DATA RIGHTS

The Parties have access to and use of the scientific data generated under this Agreement. In accordance with criteria established in the NASA solicitation for science participation in the STEREO mission, the STEREO data will be treated as a public resource and will be made available for public access as soon as is practical. After the initial check out and calibration period of approximately 3 months after initial operation, the STEREO database and requisite basic analysis software will be made available to the international community through a NASA data center. After the initial period, the data will be made public with no more than a two-month delay.

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2. All transfers of proprietary technical data and export-controlled goods and technical data are subject to the following provisions. In the event a Party finds it necessary to transfer goods which are subject to export controls or technical data which is proprietary or subject to export control, and for which protection is to be maintained, such goods shall be specifically identified and such technical data shall be marked with a notice to indicate that they shall be used and disclosed by the receiving Party and its related entities (e.g., contractors and subcontractors) only for the purposes of fulfilling the receiving Party's responsibilities under the programs implemented by this Agreement, and that the identified goods and marked technical data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing party. The receiving party agrees to abide by the terms of the notice, and to protect any such identified goods and marked technical data from unauthorized use and disclosure, and also agrees to obtain these same obligations from its related entities prior to the transfer.

3. All goods, marked proprietary data, and marked or unmarked technical data subject to export control, which is transferred under this Agreement, shall be used by the receiving party exclusively for the purposes of the programs implemented by this Agreement.

4. Title to all hardware to be exchanged under this Agreement will be retained by the party providing the item.

INVENTION AND PATENT RIGHTS

Nothing in this Agreement shall be construed as granting or implying any rights to, or interest in, patents or inventions of the Parties or their contractors or subcontractors. In the event that an invention is jointly made by employees of the parties, their contractors or subcontractors, during the implementation of this agreement, the parties shall consult and agree as to the responsibilities and costs of actions to be taken to establish and maintain patent protection (in any country) for such invention and on the terms and conditions of any license or other rights to be exchanged or granted by or between the parties.

LIABILITY AND RISK OF LOSS

With regard to activities undertaken pursuant to this Agreement, neither Party shall make any claim against the other, employees of the other, the other's related entities (e.g., contractors, subcontractors, investigators, or their contractors or subcontractors), or employees of its related entities, or for damage to or loss of its own property or that of its related entities, whether such injury, death, damage or loss arises through negligence or otherwise.

The Parties further agree to use all reasonable efforts to extend this provision as set forth above to their own related entities by requiring them, by contract or otherwise, to waive all claims against the other Party and its related entities against any claim for injury, death, damage or loss arising from activities undertaken pursuant to this Agreement.

This cross-waiver of liability shall not be applicable to:

1. Claims between a Party and its own related entity or between its own related entities;

2. Claims made by a natural person, his/her estate, survivors or subrogates for bodily injury, other impairment of health, or death of such natural person;

3. Claims for damage caused by willful misconduct;

4. Intellectual property claims;

5. Claims for damage based upon a failure of the Parties to extend the provision as set forth above or from a failure of the Parties to ensure that their related entities extend the provision as set forth above; or

6. Contract claims between the Parties based on express contractual provisions.

Nothing in this section shall be construed to create the basis for a claim or suit where none would otherwise exist.

CUSTOMS CLEARANCE

NASA and the Hungarian Space Office will arrange for timely, free customs clearance of equipment and data required for this project. In the event that any customs duty, fees and/or taxes of any kind are levied by the governments of the Parties on the equipment and related goods for the execution of this Agreement, and after seeking the necessary free customs clearance and waiver of applicable customs duties and taxes, such customs duty, fees and/or taxes shall be borne by the Party of the country levying the customs duty, fees and/or taxes. Such arrangements shall be reciprocal and in accordance with the respective national laws and regulations of the Parties.

PUBLIC INFORMATION

Release of public information regarding this program may be made by the appropriate agency for its own portion of the program as desired and, insofar as participation of the other is involved, after suitable consultation.

CONSULTATIONS/SETTLEMENT OF DISPUTES

The parties shall consult promptly with each other on all issues involving interpretation or implementation of this MOU, implementing arrangement and resulting annexes as specified.

Any matter that has not been settled in accordance with the above paragraph shall be referred to the NASA Program Executive and the KFKI-RMKI point of contact listed above. These program managers will attempt to resolve all issues arising from the implementation of this agreement. If they are unable to come to agreement on any issue, then the dispute will be referred to the agreement signatories, or their designated representatives for joint resolution. If the parties are unable to resolve the dispute, the NASA signatory will issue a final written decision on behalf of NASA.

MISHAP INVESTIGATIONS

In the case of a mishap or mission failure, the parties agree to provide assistance to each other in the conduct of any investigation. In the case of activities which might result in the death of, or serious injury to persons, or substantial loss of, or damage to property as a result of activities under this agreement, the parties agree to establish a process for investigating each such mishap as part of their program/project implementation agreements.

ENTRY INTO FORCE AND TERMINATION

This Letter of Agreement will go into effect upon the date of the Hungarian Space Office's affirmative reply. It will remain in force until the two STEREO spacecraft are on-orbit and operating for 2 years, or December 31, 2007, whichever is earlier. It may be extended or amended by mutual written agreement of the Parties. This Agreement can be terminated by NASA or the Hungarian Space Office after six months' written notice of its intention to terminate the Agreement.

If the above terms and conditions are acceptable to the Hungarian Space Office, we propose that this letter, together with your affirmative reply, document our joint understanding as to the implementation of this cooperative effort.

Sincerely,

P. Diane Rausch
Director
Space Science and Aeronautics Division
Office of External Relations

460.AGM7.0009
MAR 13 2001 002

PPARC

The UK's Strategic Science Investment Agency

Particle Physics and Astronomy Research Council
Polaris House, North Star Avenue, Swindon
Wiltshire SN2 1SZ United Kingdom

www.pparc.ac.uk

Tel +44 (0)1793 442000 Fax +44 (0)1793 442002

Dr P Diane Rausch
Director
Space Science and Aeronautics Division
Office of External Relations
NASA
Washington, DC 20546-0001
USA

Direct line (01793) 442019
Local fax (01793) 442036
E-mail Graham.Brooks@pparc.ac.uk

7 March 2001

Dear Dr Rausch

STEREO AGREEMENT

Thank you for your letter. I can confirm that PPARC is satisfied with the terms and conditions contained in the letter and that your letter and this response documents over joint understanding for the implementation of this co-operative effort.

Yours sincerely

Graham Brooks
Head of Technology Group
Astronomy Division

cc: Professor Simnett

the physics of the universe

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National Aeronautics and
Space Administration
Headquarters
Washington, DC 20546-0001

Reply to Attn of IS

JAN 12 2001

Dr. Graham Brooks
Head of Technology Group
Particle Physics and Astronomy Research Council
Polaris House
North Star Avenue
Swindon Wiltshire SN2 1 SZ
United Kingdom

Dear Dr. Brooks:

The National Aeronautics and Space Administration (NASA) and the Particle Physics and Astronomy Research Council (PPARC) have a mutual interest in pursuing cooperation on the Solar Terrestrial Relations Observatory (STEREO) mission. The purpose of this letter is to establish an Agreement between NASA and PPARC (hereinafter, "the Parties") to address our cooperation on the STEREO mission.

STEREO is a major mission in the NASA Solar Terrestrial Probes Program within the NASA Sun-Earth Connection theme in the Office of Space Science. STEREO will unveil the Sun in three dimensions for the first time. Its objective is to address the origin, evolution and interplanetary consequences of one of the most massive disturbances in our solar system called the coronal mass ejection (CME). This will be achieved by sending two identically instrumented spacecraft, both at 1 Astronomical Unit orbit around the Sun, but one flying well ahead of the Earth and one behind the Earth.

The instrument suite for STEREO will characterize the CME plasma all the way from the solar surface to the orbit of the Earth. These instruments will measure physical characteristics of CMEs with remote sensing and local sensing instruments, allowing scientists to determine solar origins of CMEs, their propagation into the interplanetary medium and ultimately their consequences on Earth's magnetic field. By viewing CMEs in three dimensions, STEREO will be able to pinpoint their speed and distance from Earth, and thus more accurately time the arrival of the plasma cloud at the Earth.

The NASA Headquarters Office of Space Science solicited proposals for science participation in the STEREO mission including the opportunity for international collaboration in April 1999, in Announcement of Opportunity 99-OSS-01, and made selections in November 1999. A team led by Dr. Russell Howard from the U.S. Naval Research Laboratory was selected to provide the Sun Earth Connection and Heliospheric

Investigation (SECCHI) instrument suite as part of the STEREO payload. The instrument suite contains three units as follows: a Heliospheric Imager (HI), a Sun-Centered Imaging Package (SCIP), and a data processing unit. The HI contains two telescopes to characterize the region between the Sun and Earth. The SCIP contains two white light coronagraphs to characterize the inner and outer corona (COR1 and COR2, respectively); and an Extreme Ultraviolet Imager (EUVI) to observe the solar chromosphere and low corona in the extreme ultraviolet. Three investigators from the United Kingdom were selected to provide one instrument and components for three other instruments in the SECCHI instrument suite as follows:

- Investigators from the Rutherford Appleton Laboratory were selected to provide the design and qualification of the charge coupled device (CCD)cameras;
- Investigators from the Astrophysics and Space Research Group of the School of Physics and Astronomy at the University of Birmingham were selected to provide the HI instrument, and the fabrication of the CCD cameras for the COR1, COR2, and EUVI instruments.

Pursuant to this Letter of Agreement and in the context of the British participation noted above, PPARC will use reasonable efforts to carry out the following responsibilities:

1. Provide two HI flight instruments and prototype units, part of the SECCHI instrument suite on each of two identically-instrumented spacecraft;
2. Provide interface documentation (data, thermal, mechanical, electrical, etc.) to support the development, integration, and testing of the HI instrument into the SECCHI instrument suite;
3. Provide the ground support equipment to support the two HI instruments including computers, test cables, ground support hardware and software, and Internet distribution boxes;
4. Provide appropriate spare parts, documentation, calibration, electrical harnesses, purge plumbing, and simulators for the HI instrument as required to support the development of SECCHI instrument suite;
5. Provide data analysis support for the HI instruments during the STEREO mission;
6. Provide the interface with the Belgian Co-Investigator who is working with the University of Birmingham to provide parts of the HI instrument package;
7. Provide the design, fabrication, and delivery of the CCD cameras for the HI, COR1, COR2, and EUVI flight instruments on each of two identically-instrumented spacecraft;
8. Provide engineering and qualification CCD camera models;
9. Provide the ground support equipment to support the CCD cameras;
10. Provide appropriate spare parts, documentation, calibration, electrical harnesses, and simulators as required for the CCD cameras;
11. Provide support for the PPARC Co-Investigators;
12. Participate in the definition and development of performance requirements and interfaces for CCD cameras, and the HI instrument;
13. Support participation in Science Working Group and STEREO spacecraft and instrument meetings, and post-launch mission operations and data analyses; and,

14. Report on the schedule and performance of the PPARC deliverables to the respective STEREO instrument leads.

NASA will use reasonable efforts to carry out the following responsibilities:

1. Provide overall project management for the STEREO mission;
2. Design and build the STEREO spacecraft;
3. Provide functional requirements for the HI instrument and the CCD cameras;
4. Provide interface (electrical, mechanical, software) specifications for the HI instrument and CCD cameras;
5. Provide performance assurance requirements to the PPARC-funded investigators;
6. Manage the PPARC-provided hardware and software contributions delivered to the U.S. organizations;
7. Provide the SECCHI electronics box simulator to PPARC-funded investigators for testing with the HI instrument, as required;
8. Assure that the PPARC-funded Co-Investigators will have full rights to the STEREO data in accordance with the NASA Science Management Plan for STEREO;
9. Release science data in a manner consistent with NASA STEREO science data policy; and,
10. Provide launch, and manage the STEREO flight operations and testing and post-launch data analysis.

NASA and the PPARC (the Parties) will provide, on occasion, as mutually agreed, for personnel from NASA and the PPARC-funded institutions to visit one another's facilities to participate in integration and testing, and to observe, confer and advise the other Party in regard to aspects of design and development of compatible instrument interfaces, integration, and testing.

POINTS OF CONTACT

The NASA Headquarters point-of-contact for this program is

Ms. Vicki Elsbernd
Program Executive
Flight Programs Division
Office of Space Science, Code SD
NASA Headquarters
Washington, DC 20546
Telephone: 202-358-2499
Facsimile: 202-358-3096

The GSFC point-of-contact for this mission is:

Ms. Abigail Harper
Project Manager
Solar Terrestrial Probes Program, Mail Code 460.0
Goddard Space Flight Center
Greenbelt, MD 20771
Telephone: 301-286-5897
Facsimile: 301-286-1696

The SECCHI Principal Investigator is:

Dr. Russell Howard
Head, Solar Physics Branch, Code 7660
Naval Research Laboratory
4555 Overlook Avenue, SW
Washington, DC 20375-5352
Telephone: 202-767-2263
Facsimile: 202-767-5636

The PPARC point-of-contact for this program is:

Dr. Graham Brooks
Particle Physics and Astronomy Research Council
Polaris House
North Star Avenue
Swindon Wiltshire SN2 1 SZ
United Kingdom
Telephone: 44-1793-442019
Fax: 44-1793-442036

The point-of-contact at the University of Birmingham is:

Prof. George M. Simnett
Astrophysics and Space Research Group
School of Physics and Astronomy
University of Birmingham
Edgbaston, Birmingham B15 2TT
United Kingdom
Telephone: 44-121-414-6469
Facsimile: 44-121-414-3722

The point-of-contact at the Rutherford Appleton Laboratory is:

Dr. James Lang
Rutherford Appleton Laboratory
Chilton Didcot
Oxfordshire, OX11 0QX
United Kingdom
Telephone: 44-1235-44-6364
Facsimile: 44-1235-44-5848

FINANCIAL ARRANGEMENTS

Each Party will bear the costs of discharging its respective responsibilities, including travel and subsistence of its own personnel and transportation of all equipment for which it is responsible. It is understood that the ability of the Parties to carry out their obligations is subject to the availability of appropriated funds.

DATA RIGHTS

The Parties have access to and use of the scientific data generated under this Agreement. In accordance with criteria established in the NASA solicitation AO 99-OSS-01 for science participation in the STEREO mission, the STEREO data will be treated as a public resource and will be made available for public access as soon as is practical. After the initial check out and calibration period of approximately 3 months after initial operation, the STEREO database and requisite basic analysis software will be made available to the international community through a NASA data center. After the initial period, the data will be made public with no more than a two-month delay.

EXCHANGE OF TECHNICAL DATA AND GOODS

The Parties are obligated to transfer only those technical data (including software) and goods necessary to fulfill their respective responsibilities under this Agreement, in accordance with the following provisions:

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2. All transfers of proprietary technical data and export-controlled goods and technical data are subject to the following provisions. In the event a Party finds it necessary to transfer goods which are subject to export controls or technical data

which is proprietary or subject to export control, and for which protection is to be maintained, such goods shall be specifically identified and such technical data shall be marked with a notice to indicate that they shall be used and disclosed by the receiving Party and its related entities (e.g., contractors and subcontractors) only for the purposes of fulfilling the receiving Party's responsibilities under the programs implemented by this Agreement, and that the identified goods and marked technical data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing party. The receiving party agrees to abide by the terms of the notice, and to protect any such identified goods and marked technical data from unauthorized use and disclosure, and also agrees to obtain these same obligations from its related entities prior to the transfer.

3. All goods, marked proprietary data, and marked or unmarked technical data subject to export control, which is transferred under this Agreement, shall be used by the receiving party exclusively for the purposes of the programs implemented by this Agreement.

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LIABILITY AND RISK OF LOSS

With regard to activities undertaken pursuant to this Agreement, neither Party shall make any claim against the other, employees of the other, the other's related entities (e.g., contractors, subcontractors, investigators, or their contractors or subcontractors), or employees of its related entities, or for damage to or loss of its own property or that of its related entities, whether such injury, death, damage or loss arises through negligence or otherwise.

The Parties further agree to use all reasonable efforts to extend this provision as set forth above to their own related entities by requiring them, by contract or otherwise, to waive all claims against the other Party and its related entities against any claim for injury, death, damage or loss arising from activities undertaken pursuant to this Agreement.

This cross-waiver of liability shall not be applicable to:

1. Claims between a Party and its own related entity or between its own related entities;

2. Claims made by a natural person, his/her estate, survivors or subrogates for bodily injury, other impairment of health, or death of such natural person;

3. Claims for damage caused by willful misconduct;

4. Intellectual property claims;

5. Claims for damage based upon a failure of the Parties to extend the provision as set forth above or from a failure of the Parties to ensure that their related entities extend the provision as set forth above; or

6. Contract claims between the Parties based on express contractual provisions.

Nothing in this section shall be construed to create the basis for a claim or suit where none would otherwise exist.

CUSTOMS CLEARANCE

NASA and PPARC will arrange for timely, free customs clearance of equipment and data required for this project. In the event that any customs duty, fees and/or taxes of any kind are levied by the governments of the Parties on the equipment and related goods for the execution of this Agreement, and after seeking the necessary free customs clearance and waiver of applicable customs duties and taxes, such customs duty, fees and/or taxes shall be borne by the Party of the country levying the customs duty, fees and/or taxes. Such arrangements shall be reciprocal and in accordance with the respective national laws and regulations of the Parties.

PUBLIC INFORMATION

Release of public information regarding this program may be made by the appropriate agency for its own portion of the program as desired and, insofar as participation of the other is involved, after suitable consultation.

CHOICE OF LAW

The parties hereby designate the U.S. Federal law to govern this Agreement for all purposes, including, but not limited to, determining the validity of the Agreement, the meaning of its provisions, and the rights, obligations, and remedies of the Parties.

CONSULTATIONS/SETTLEMENT OF DISPUTES

The parties shall consult promptly with each other on all issues involving interpretation or implementation of this MOU, implementing arrangement and resulting annexes as specified.

Any matter that has not been settled in accordance with the above paragraph shall be referred to the NASA Headquarters point of contact and the PPARC point of contact listed above. These program managers will attempt to resolve all issues arising from the implementation of this agreement. If they are unable to come to agreement on any issue, then the dispute will be referred to the agreement signatories, or their designated representatives for joint resolution. If the parties are unable to resolve the dispute, the NASA signatory will issue a final written decision on behalf of NASA.

MISHAP INVESTIGATIONS

In the case of a mishap or mission failure, the parties agree to provide assistance to each other in the conduct of any investigation. In the case of activities which might result in the death of, or serious injury to persons, or substantial loss of, or damage to property as a result of activities under this agreement, the parties agree to establish a process for investigating each such mishap as part of their program/project implementation agreements.

ENTRY INTO FORCE AND TERMINATION

This Letter of Agreement will go into effect upon the date of PPARC's affirmative reply. It will remain in force until the two STEREO spacecraft are on-orbit and operating for 2 years, or December 31, 2007, whichever is earlier. It may be extended or amended by mutual written agreement of the Parties. This Agreement can be terminated by NASA or PPARC after six months' written notice of its intention to terminate the Agreement.

If the above terms and conditions are acceptable to PPARC, we propose that this letter, together with your affirmative reply, document our joint understanding as to the implementation of this cooperative effort.

Sincerely,

P. Diane Rausch
Director
Space Science and Aeronautics Division
Office of External Relations